Alum Rock Avenue Landslide

GEOLOGICAL SUMMARY

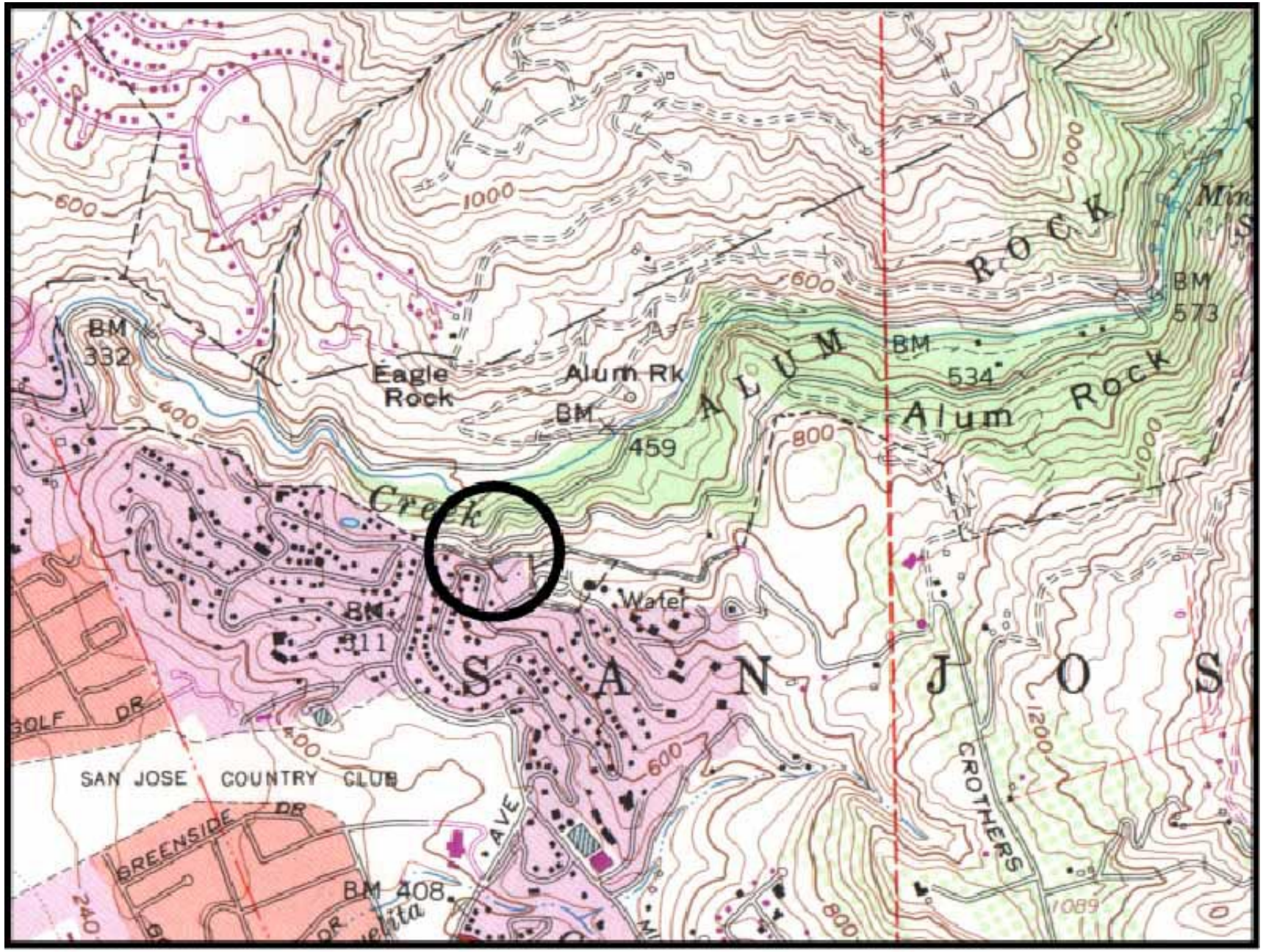
Sands Figuers, Norfleet Consultants

- The Alum Rock Avenue Landslide has been moving intermittently for thousands of years.

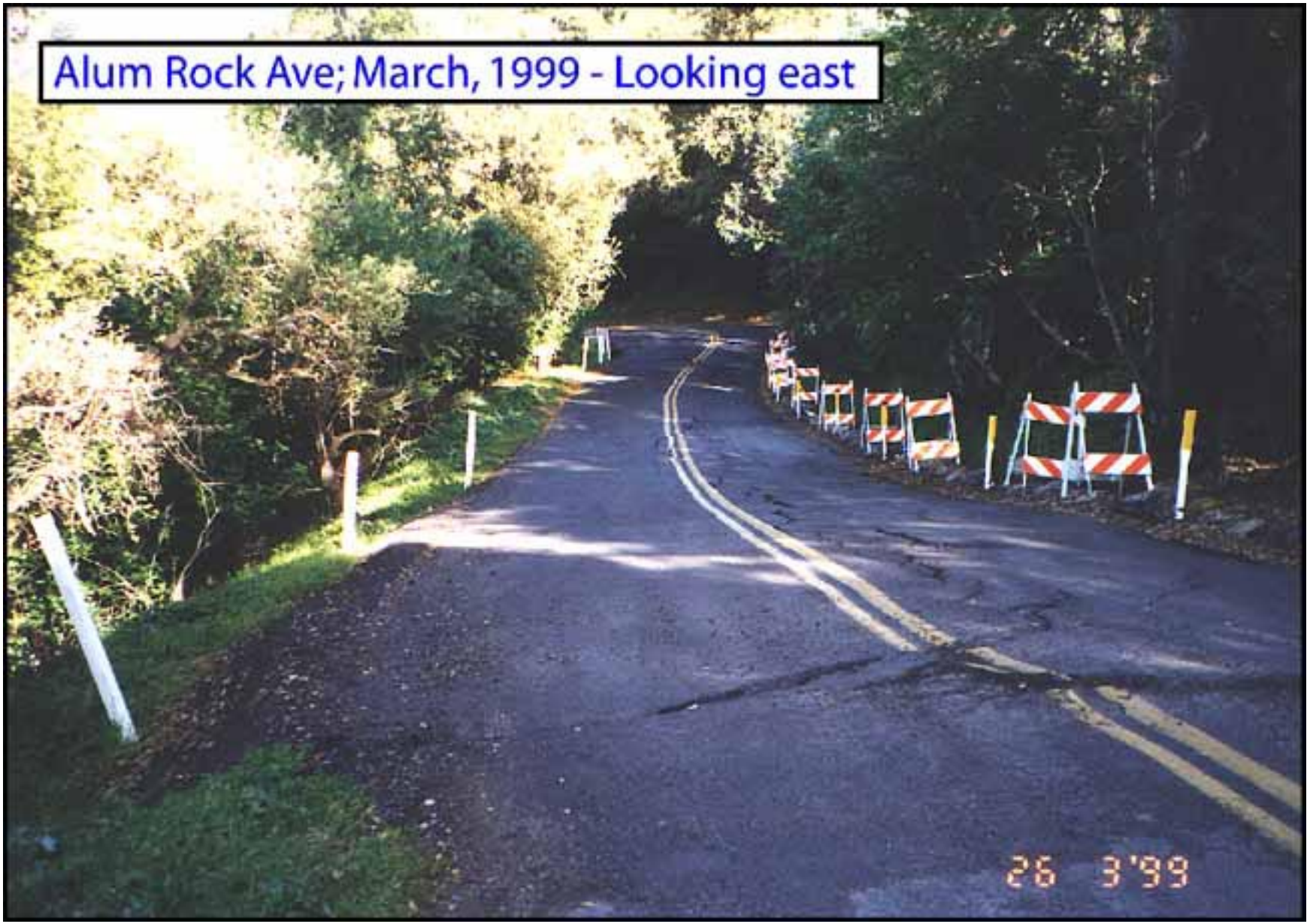
- The landslide reactivated in early 1998 due to the heavy rainfall of the 1997-98 rainy season in conjunction with erosion of the toe of the slide by Penitencia Creek.

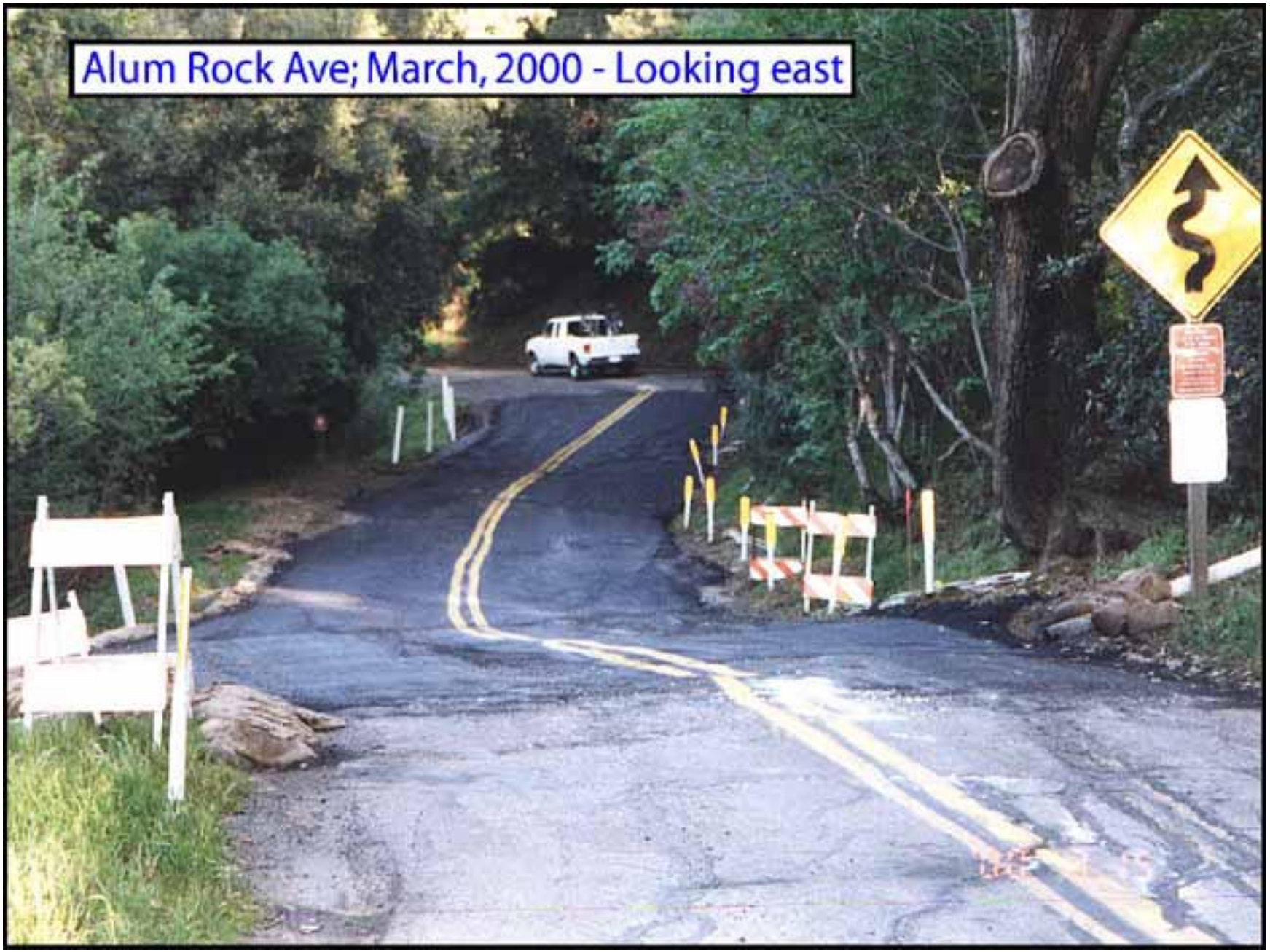
- Since the landslide reactivated in early 1998, the roads crossing the landslide have moved approximately 5 to 7 feet horizontally and 3 to 5 feet vertically. The park entrance road (Alum Rock Avenue) has continued to move throughout the summer of 2000.

- The park entrance road could fail catastrophically.



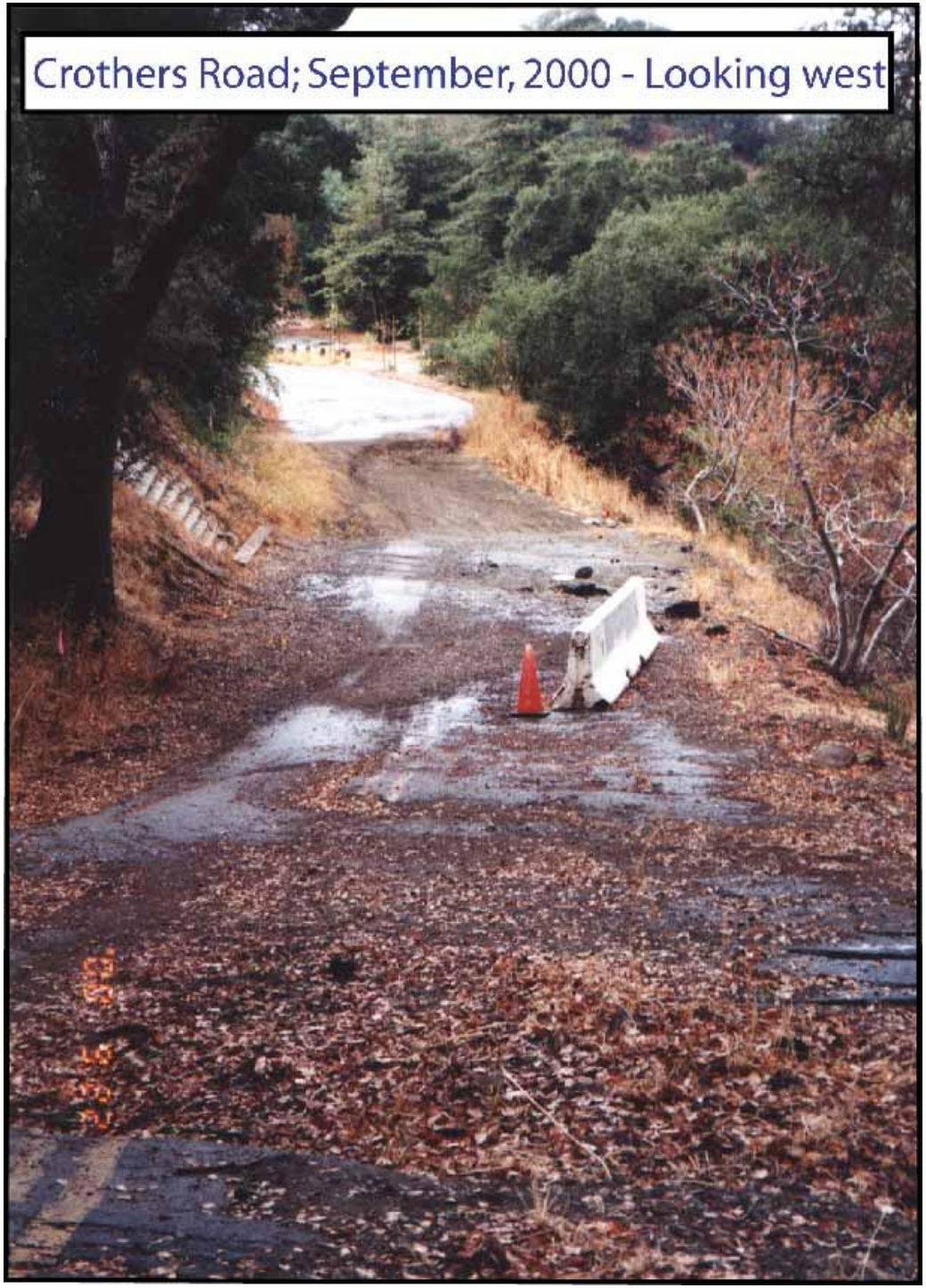
USGS Topographic Map - Calaveras Reservoir Quad.


Alum Rock Ave; March, 1999 - Looking east
26 3'99

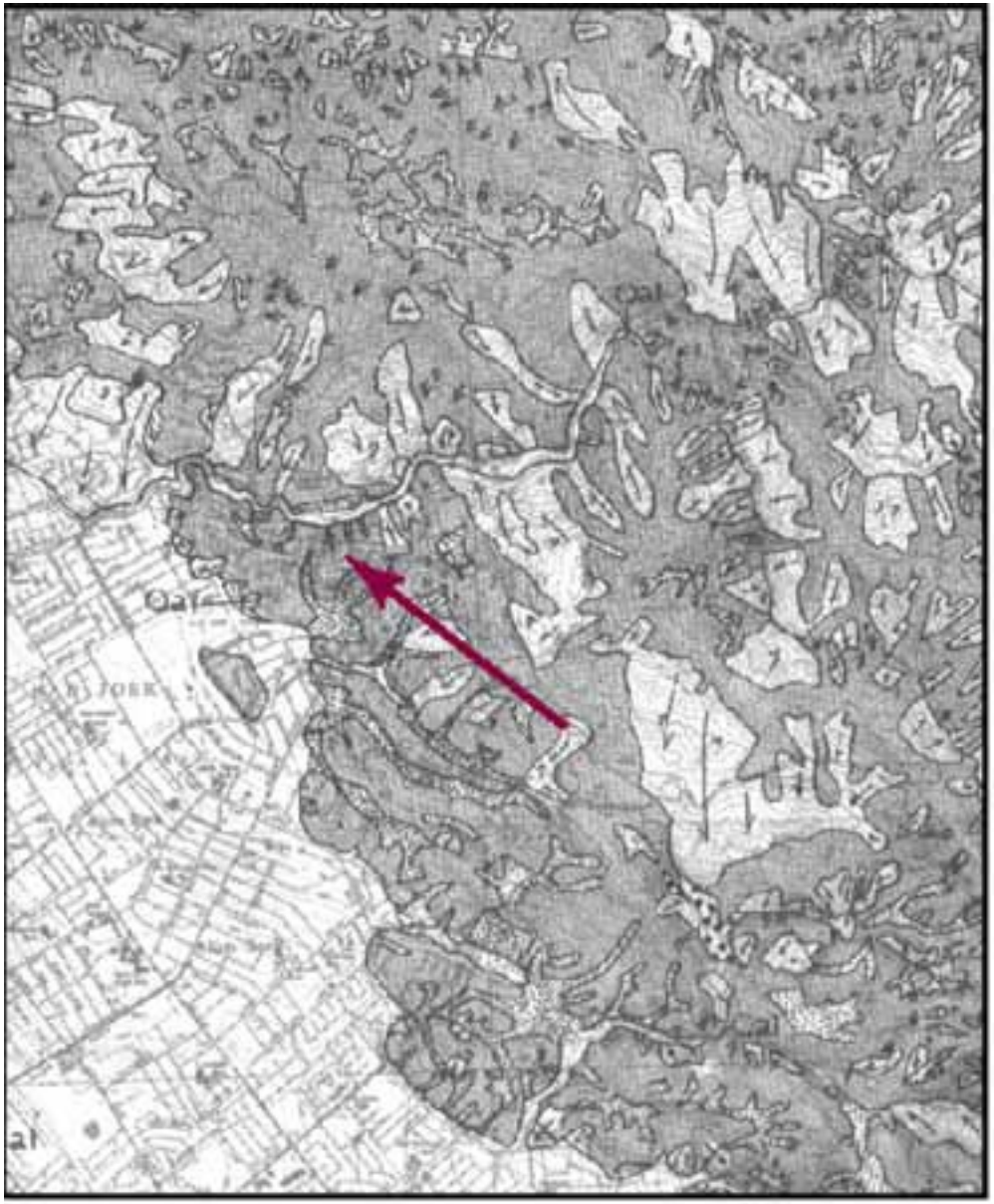

Alum Rock Ave; March, 2000 - Looking east


Alum Rock Ave; September, 2000 - Looking east
'00 9 22


Crothers Road; March, 1999 - Looking east
26 3'99


Crothers Road; September, 2000 - Looking west


Highland Ave; September, 2000 - Looking east



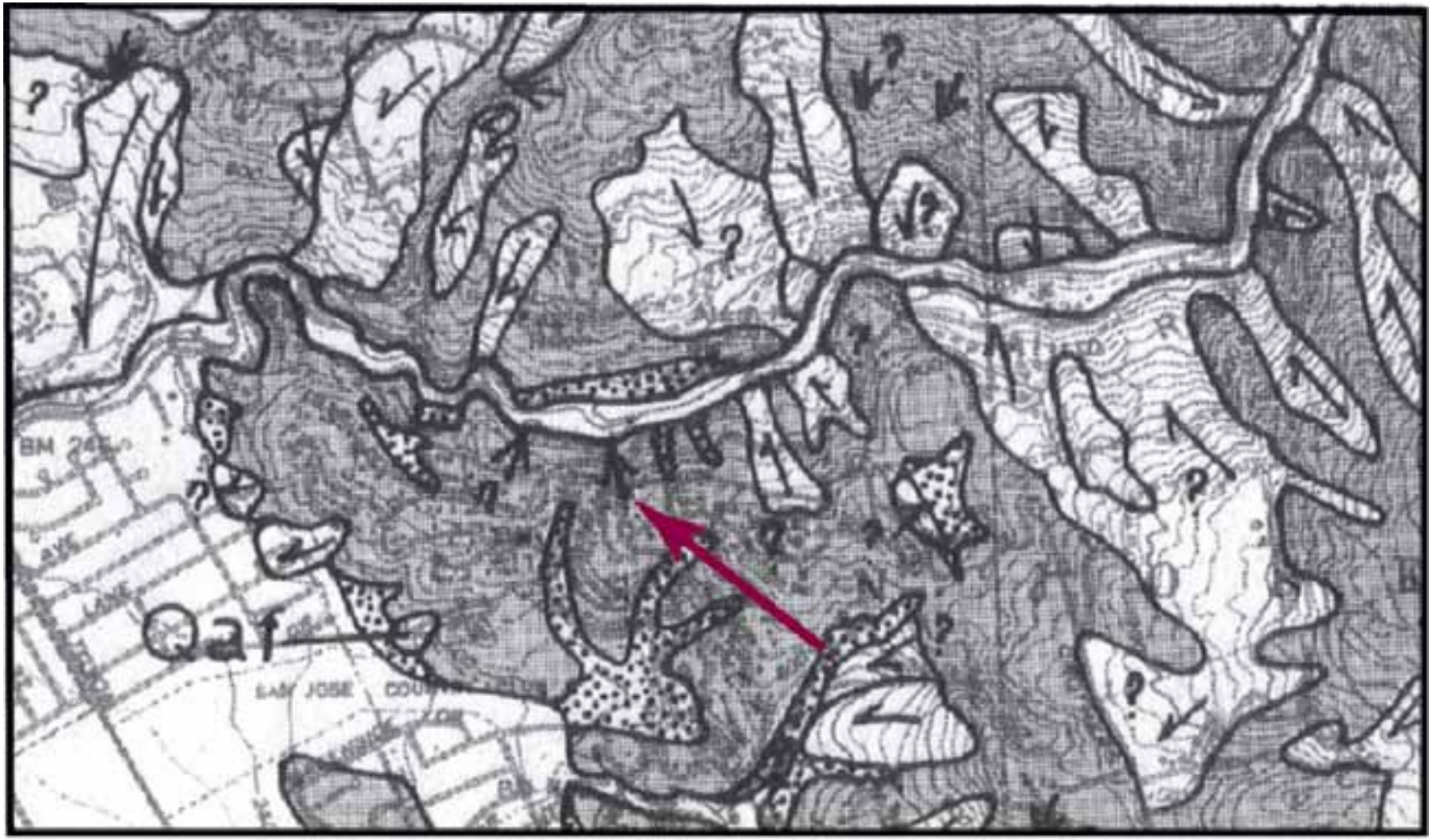
USGS MF-339 (1972)

Outlined areas - Landslides larger than 500 feet long.

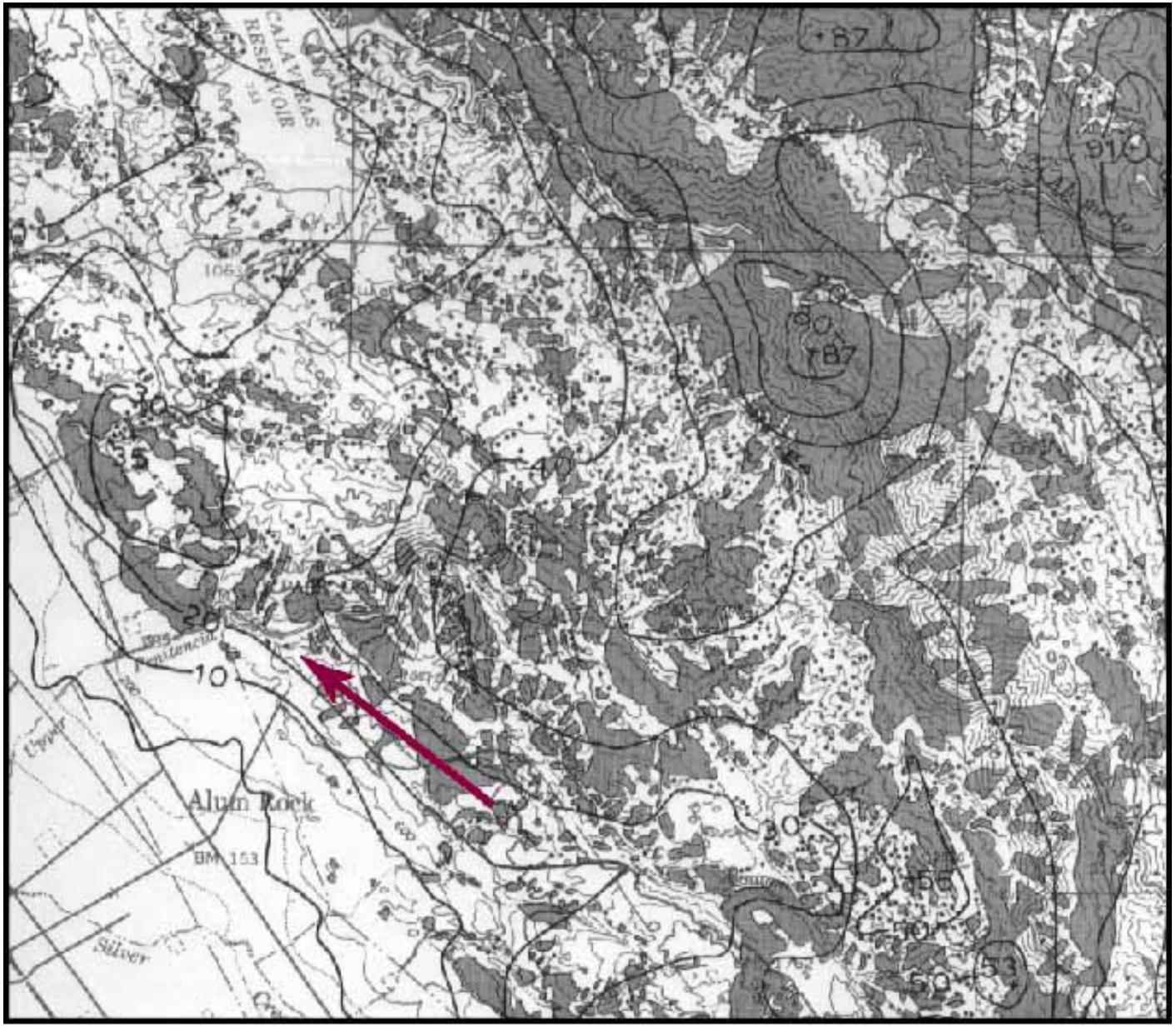
Arrows - Landslides 200 to 500 feet long.

Shadded areas - Bedrock.

Stippled areas - Colluvial/alluvial deposits



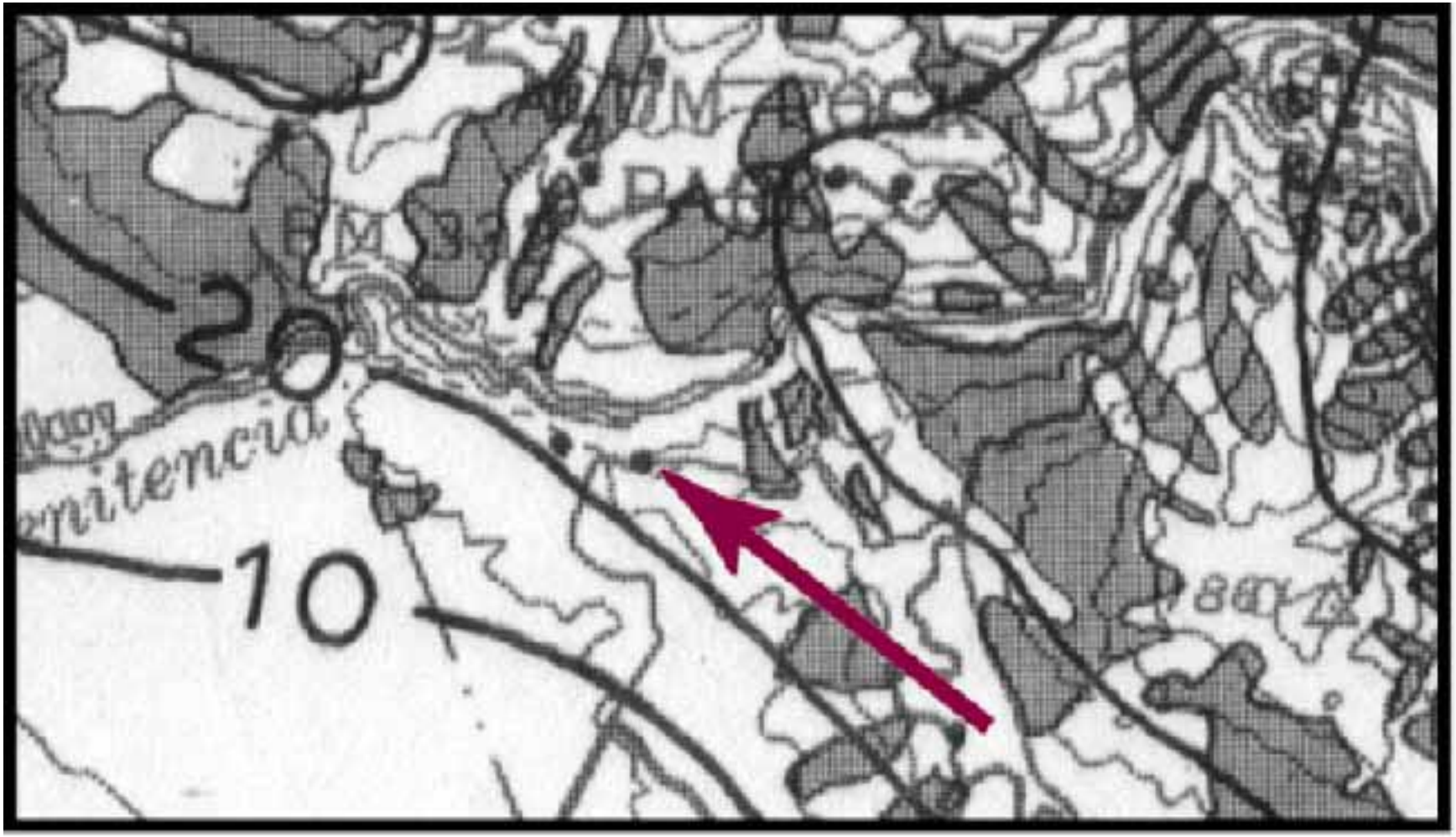
Detail from USGS MF-339 (1972)
Large Areas - Landslides larger than 500 feet long.
Arrows - Landslides less than 500 feet long.



USGS MF-550 (1974)

Dark areas - Landslides larger than 500 feet long.
Dots - Landslides less than 500 feet long.

Contours - Percentage of land covered by landslides.
(in a one inch diameter circle at original map scale)

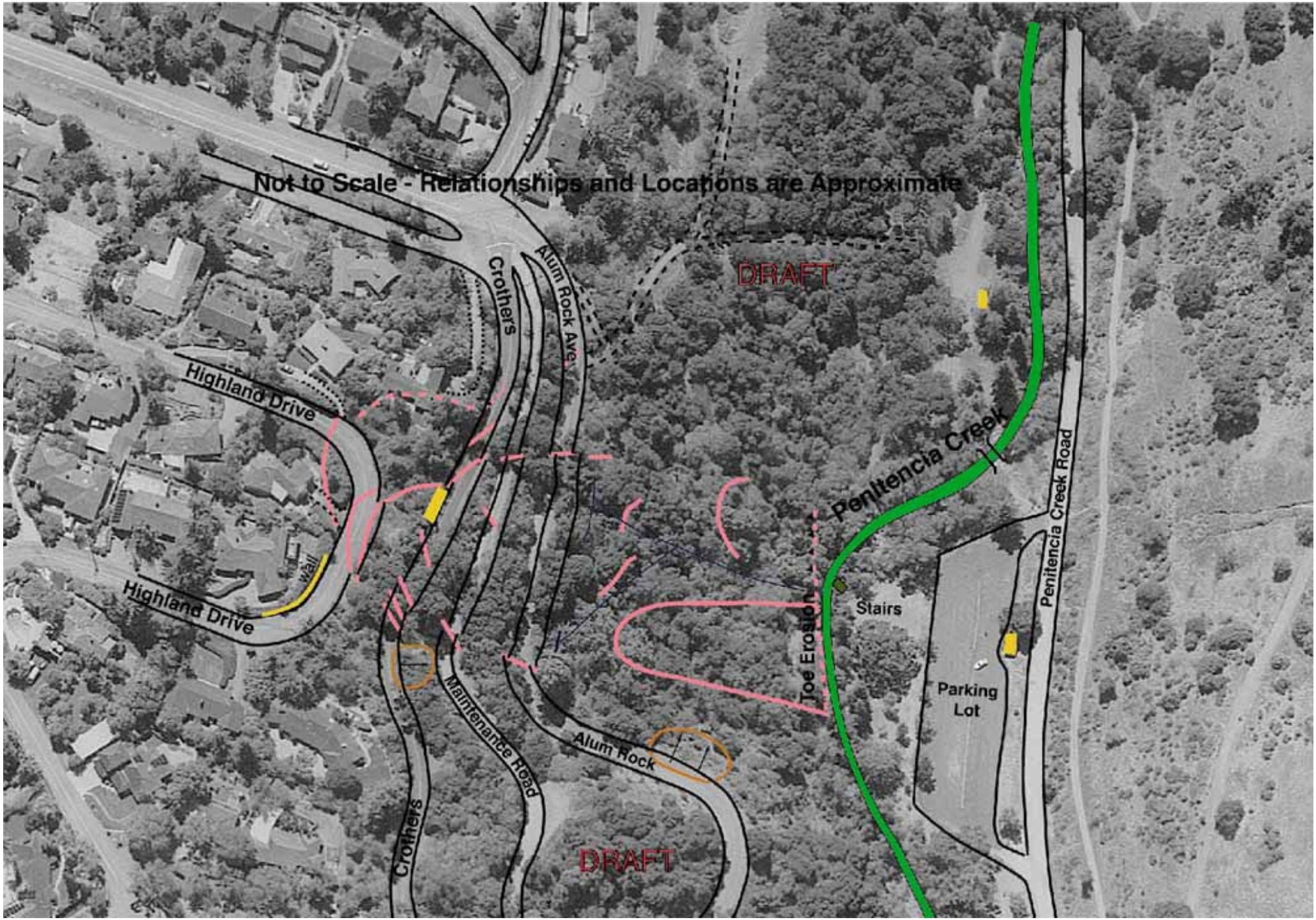


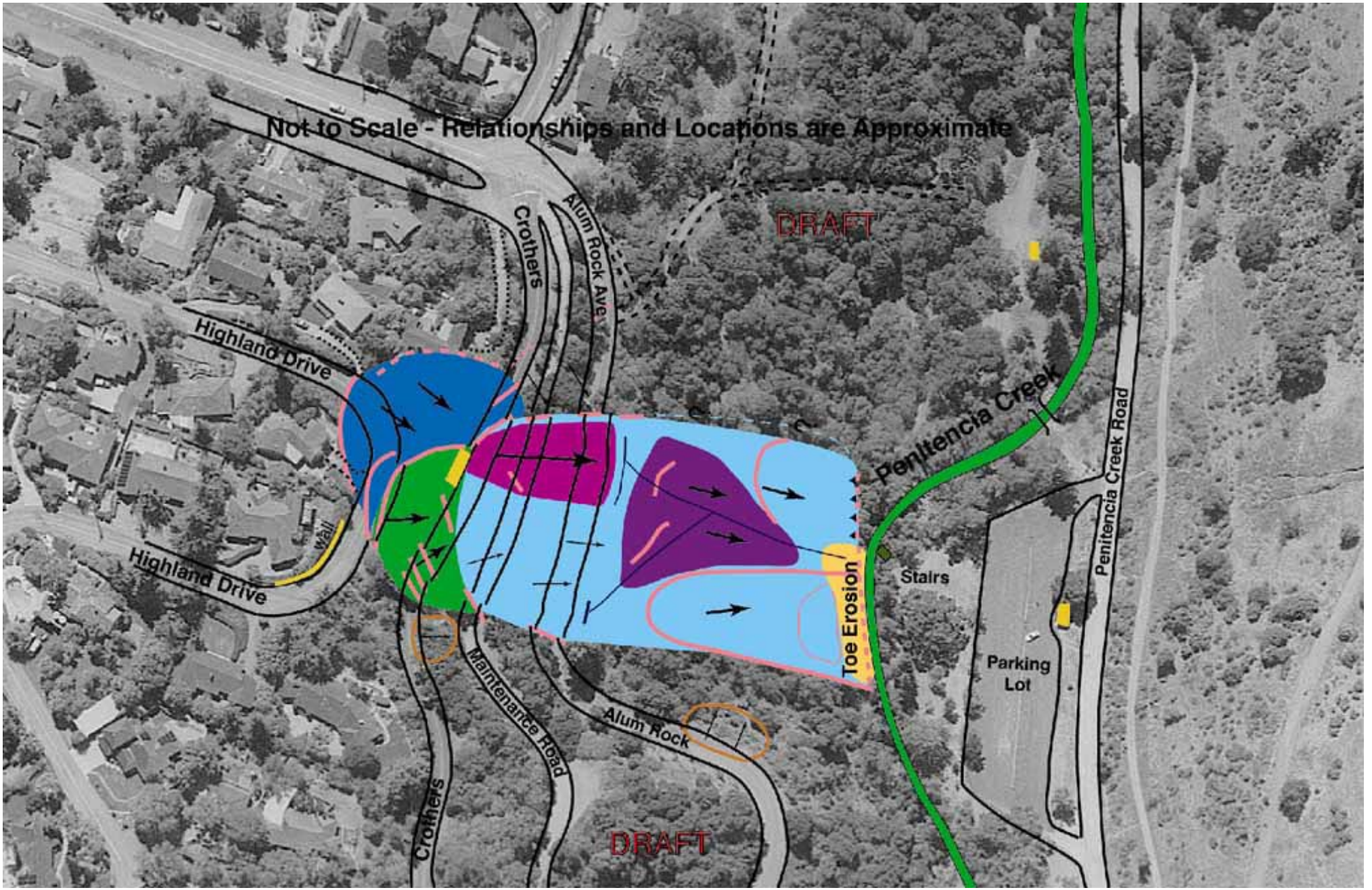
USGS MF-550 (1974)

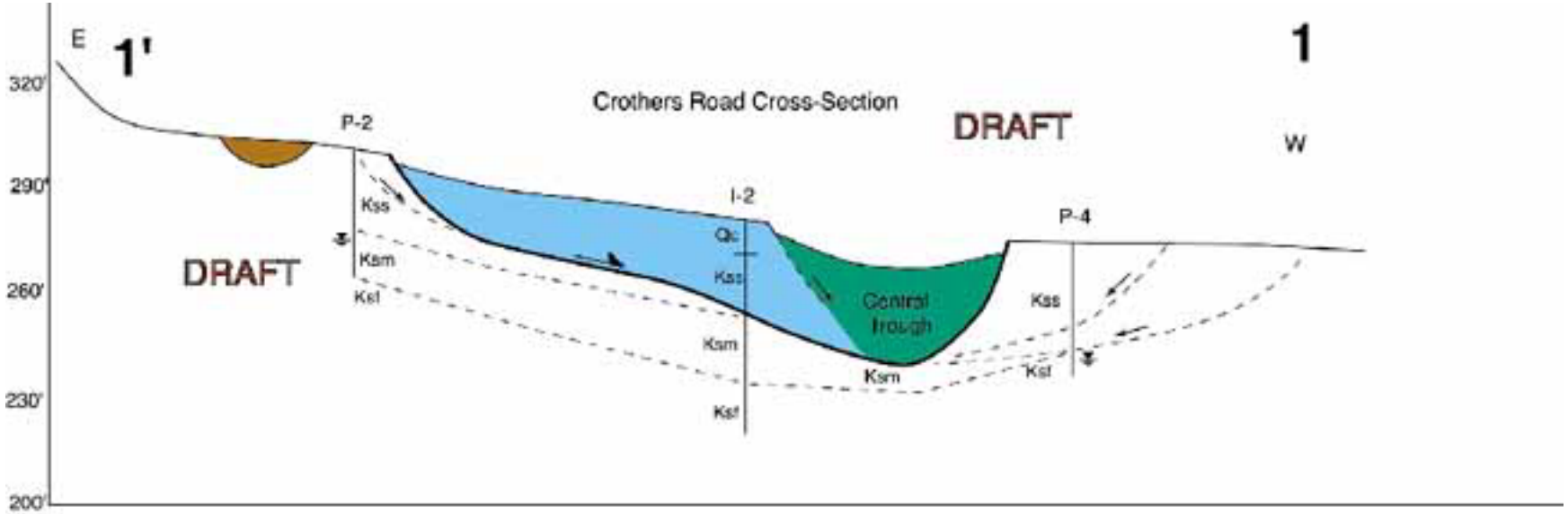
Dark areas - Landslides larger than 500 feet long.

Dots - Landslides less than 500 feet long.

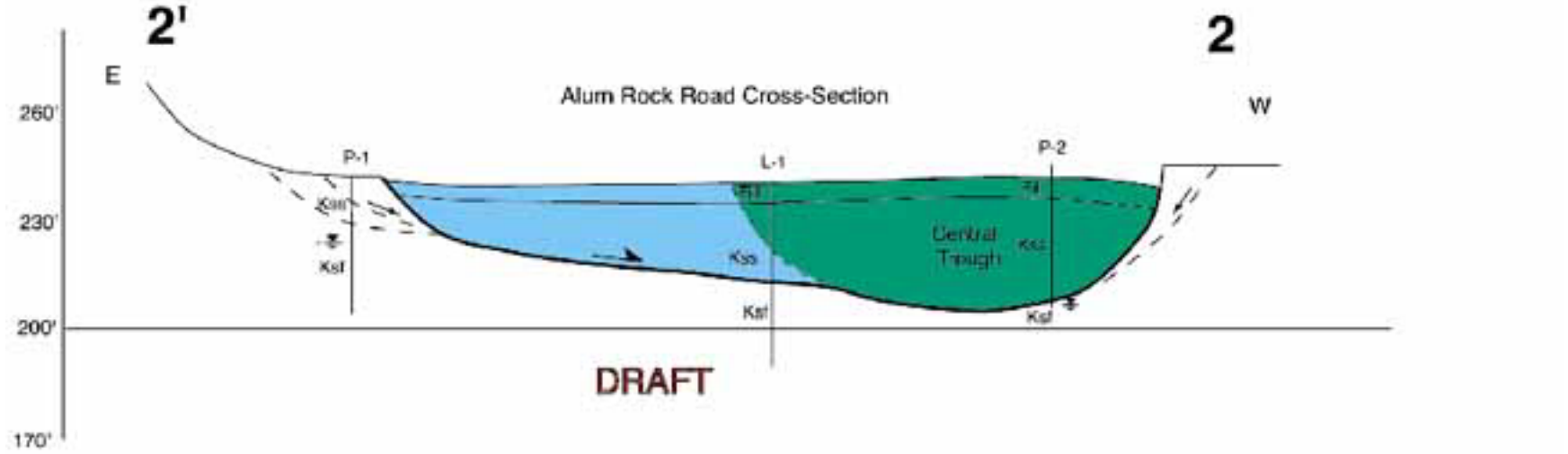
Contours - Percentage of land covered by landslides.
(in a one inch diameter circle at original map scale)

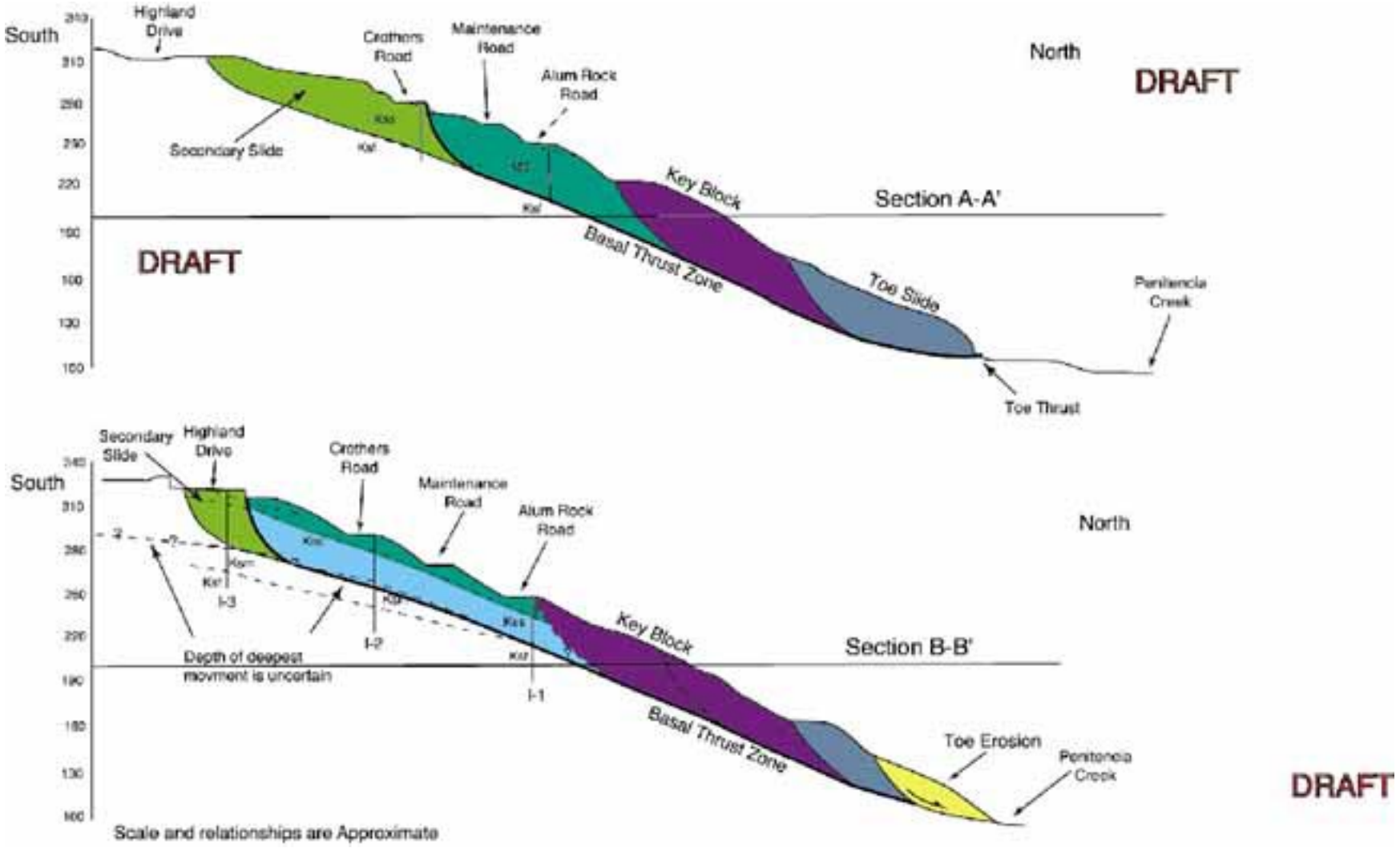

Not to Scale - Relationships and Locations are Approximate
DRAFT
Crothers
Alum Rock Ave.
Highland Drive
Highland Drive
wall
Penitencia Creek
Penitencia Creek Road
Toe Erosion
Stairs
Parking Lot
Maintenance Road
Alum Rock
Crothers
DRAFT


Not to Scale - Relationships and Locations are Approximate
DRAFT
Crothers
Alum Rock Ave
Highland Drive
Highland Drive
wall
Penitencia Creek
Penitencia Creek Road
Stairs
Toe Erosion
Parking Lot
Maintenance Road
Alum Rock
Crothers
DRAFT

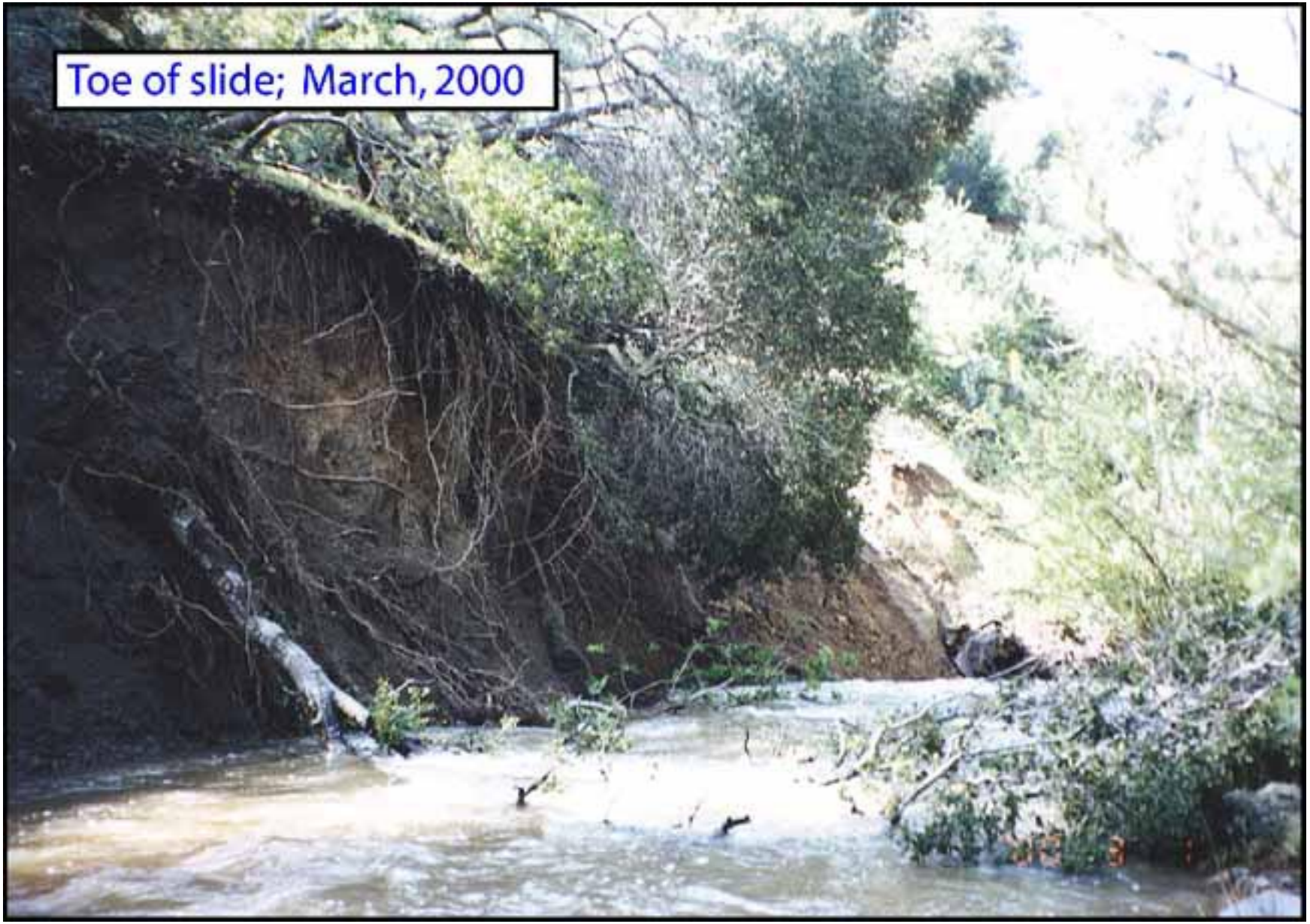


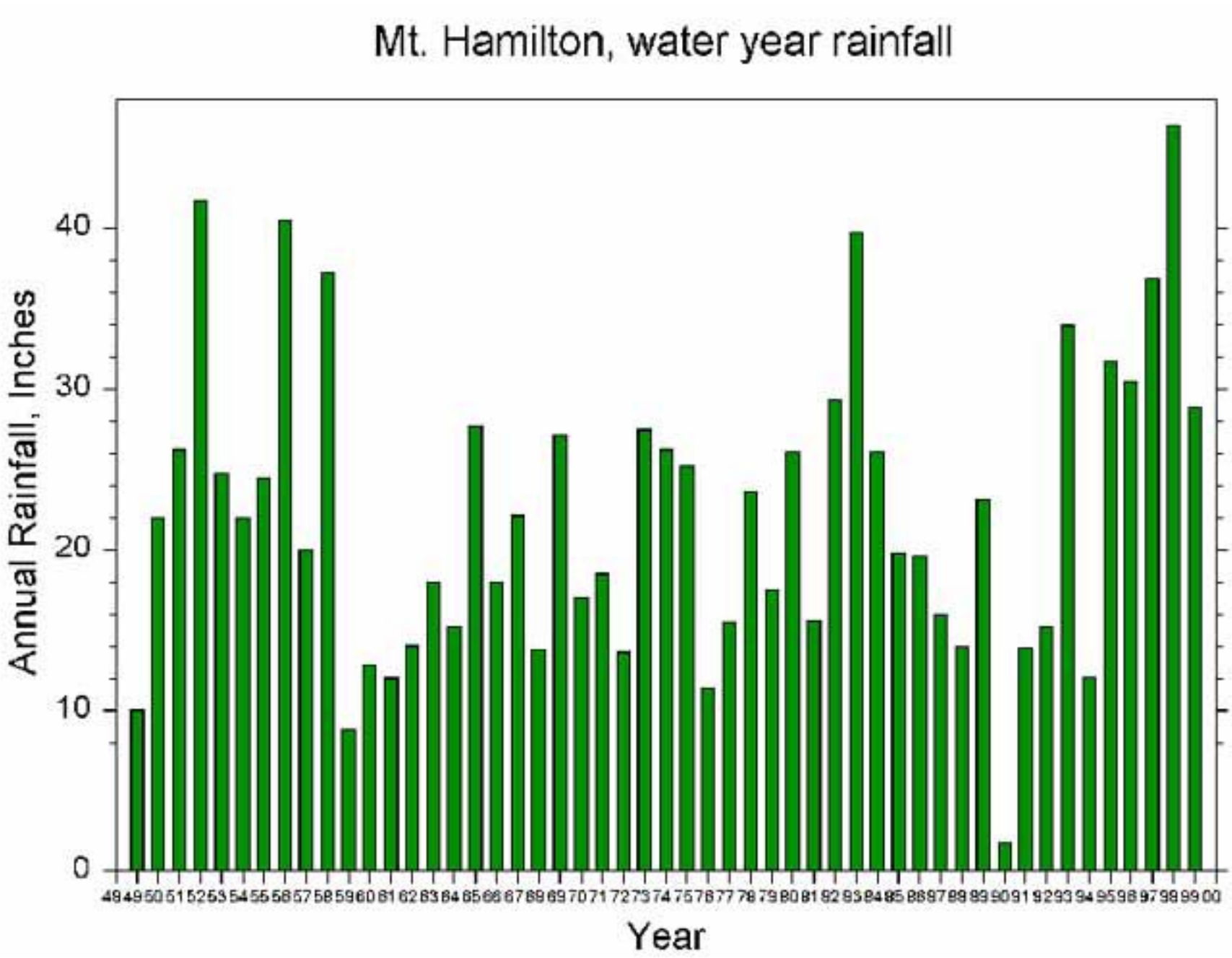
Relationships and Scale are approximate




South
Highland Drive
Crothers Road
Maintenance Road
Alum Rock Road
North
DRAFT
Secondary Slide
Key Block
Section A-A'
Basal Thrust Zone
Toe Slide
Penitencia Creek
DRAFT
Toe Thrust
Secondary Slide
Highland Drive
Crothers Road
Maintenance Road
Alum Rock Road
South
North
I-3
I-2
I-1
Key Block
Section B-B'
Depth of deepest movment is uncertain
Basal Thrust Zone
Toe Erosion
Penitencia Creek
DRAFT
Scale and relationships are Approximate


Not to Scale - Relationships and Locations are Approximate
DRAFT
Crothers
Alum Rock Ave
Highland Drive
Highland Drive
Wall
Penitencia Creek
Penitencia Creek Road
Stairs
Toe Erosion
Parking Lot
Maintenance Road
Alum Rock
Crothers
DRAFT

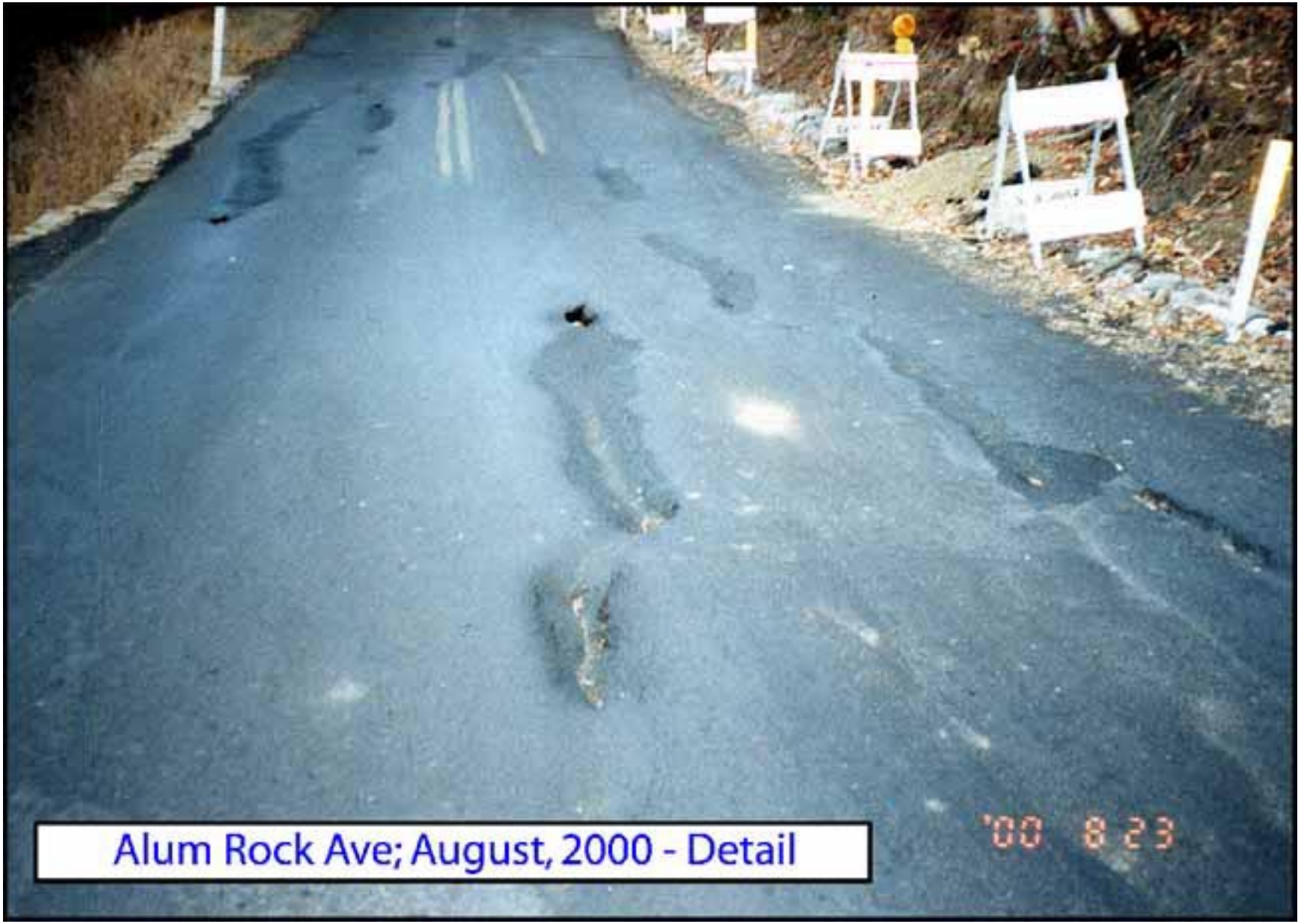

Toe of slide; March, 2000


Mt. Hamilton, water year rainfall
Annual Rainfall, Inches
0
10
20
30
40
Year


Crothers Road; September, 2000 - Looking west
'00 9 22


Maintenance Road; August, 2000 - Looking east


Alum Rock Ave; August, 2000 - Looking west
'00 8 23


Alum Rock Ave; August, 2000 - Detail
'00 8 23


Not to Scale - Relationships and Locations are Approximate
DRAFT
Crothers
Alum Rock Ave.
Highland Drive
Highland Drive
Wall
Penitencia Creek
Penitencia Creek Road
Toe Erosion
Stairs
Parking Lot
Maintenance Road
Alum Rock
Crothers
DRAFT


Crothers Road; September, 2000 - Looking west
STOP
22 6 00